CLAIMS

1. A near-field optical head, having:

a slider supported by a suspension arm providing a load weight and obtaining a floating force due to a relative motion to a recording medium, and producing a gap cooperatively with the recording medium due to a balance between the load weight and the floating force; and

a probe formed in a bottom surface of the slider, and producing a near-field light or converting a near-field light produced on a surface of the recording medium into a propagation light; wherein

the recording medium and the probe interact through the near-field light when the slider scans a surface of the recording medium thereby effecting recording and reproducing information; the near-field optical head characterized in that:

the probe protrudes from the slider bottom surface.

2. A near-field optical head according to claim 1, wherein the probe is a microscopic aperture.

3. A near-field optical head according to claim 1, wherein the probe is a microscopic protrusion.

4. A near-field optical head according to any one of claims 1 to 3, comprising a mechanism which accommodates the probe in the slider bottom surface or an inside of the slider

except upon recording or reproducing of the information, and protrudes the probe from the slider bottom surface by or in a predetermined amount or direction upon recording or reproducing the information.

5. A near-field optical head according to any one of claims 1 to 4, wherein the probe is formed in a plurality of number in the slider bottom surface,

the plurality of probes being individually set with the amount or direction of protrusion or both thereof on an each probe basis.

6. A near-field optical head according to any one of claims 1 to 5, comprising a mechanism which simultaneously performs control of the amount or direction of protrusion of the probe or both thereof, and scanning of the slider over the recording medium.

7. A near-field optical head, comprising:

a slider supported by a suspension arm providing a load weight and obtaining a floating force due to a relative motion to a recording medium, and producing a gap cooperatively with the recording medium due to a balance between the load weight and the floating force;

at least one hole in an inverted frustum form formed through the slider so as to provide at an apex a microscopic aperture in the slider bottom surface; and

a light emitting element or light detecting element provided in a bottom of the inverted frustum formed hole;

wherein a distance between the microscopic aperture and the light emitting element or light detecting element is given shorter than a thickness of the slider.

add A6

Add E7